IOT Based Safety Gadget For Child Safety Monitoring And Notification

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Professional Readiness for Innovation, Employability & Entrepreneurship

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In partial ***fulfillment for the award of the degree***

of

BACHELOR OF ENGINEERING

IN

ELECTRONICS AND COMMUNICATION ENGINE

MEENAKSHI COLLEGE OF ENGINEERING,WEST K.K NAGAR

ANNA UNIVERSITY: CHENNAI-600025

NOVEMBER 2022

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R.ANANDHA PRABHA **D.SATHEESWARI**

ABSTRACT:

Safety of a child in a large public event is a major concern for event organizers and parents. This paper addresses this important concern and proposes an architecture model of the IoTenable smart child safety tracking digital systems. This IoT-enabled digital system architecture integrates the Cloud, Mobile and GPS technology to precisely locate the geographical location of a child on an event map. The proposed architecture model describes the people, information, process, and technology architecture elements, and their relationships for the complex IoT-enable smart child safety tracking digital system.

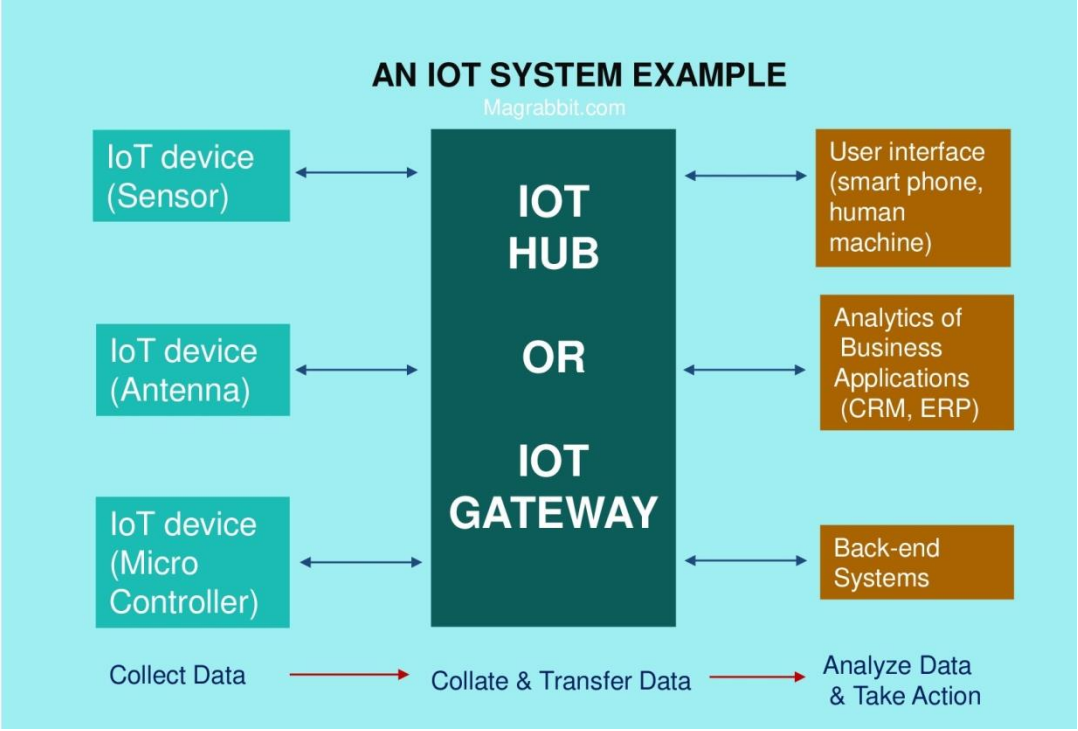
CONTENT

INTRODUCTION

Devices and objects with built in sensors are connected to an Internet of Things platform, which integrates data from the different devices and applies analytics to share the most valuable information with applications built to address specific needs.
These powerful IoT platforms can pinpoint exactly what information is useful and what can safely be ignored. This information can be used to detect patterns, make recommendations, and detect possible problems before they occur.
For example, if I own a car manufacturing business, I might want to know which optional components (leather seats or alloy wheels, for example) are the most popular. Using Internet of Things technology, I can:

- Use sensors to detect which areas in a showroom are the most popular, and where customers linger longest;
- Drill down into the available sales data to identify which components are selling fastest;
- Automatically align sales data with supply, so that popular items don't go out of stock.

The information picked up by connected devices enables me to make smart decisions about which components to stock up on, based on real-time information, which helps me save time and money.
With the insight provided by advanced analytics comes the power to make processes more efficient. Smart objects and systems mean you can automate certain tasks, particularly when these are repetitive, mundane, time-consuming or even dangerous. Let's look at some examples to see what this looks like in real life.



Project overview

The wearable device will provide directions to the child's location on Google earth map and will also provide the child's body temperature, so that the parents can keep track of the health condition of the child. The prime motivation behind this project is that we know how important technology is in our lives . The secondary measure

implemented was activating high glow LED's present on the wearable device which when activated by the parent as a sign of distress. Hence this project aims at providing parents with a sense of security for their child in today's time

2. LITERATURE SURVEY

2.1&2.2 Existing problem and reference

INTRODUCTION:

The internet of things or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

A thing in the internet of things can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low or any other natural or man-made object That can be assigned an Internet Protocol (IP) address and is able to transfer data over a network.

LITERATURE REVIEW: [1] Safety of a child in a large public event is a major concern for event organizers and parents. This concern proposes an architecture model of the IoT-enable smart child safety tracking digital systems.

This IoT-enabled digital system architecture, process, and technology architecture elements, and their relationships for the complex IoT-enable smart child safety tracking digital system .

Advantages: IoT-enable smart child tracking digital system to assist with the safety of a child during public events. The proposed model includes a number of technologies from the digital ecosystem such as IoT, Cloud, Mobile and GPS.

Disadvantages: There are a number of options for customizing the architecture such as the use of a tracking pin, which can be easily clipped onto the child's clothing. Thus, future research can be conducted to analyze alternate tracking options and architecture design patterns that could replace GPS with low cost RFIDs or iBeacons.

[2] Real-time monitoring of data is achieved by wirelessly sending sensor data to an open source Cloud Platform. Analysis of the data is done on MATLAB simultaneously. This device is programmed to continuously monitor the subject's parameters and take action when any a dangerous situation presents itself.

Advantages: The machine learning algorithms used make the device intelligent and the accuracy of which increases with continued use.

Disadvantages: Incorporate the advancements made in the field of wearable electronics to develop a more compact device that could possibly be integrated into clothing. Tackle the Concern that arises because of the requirement of the internet at all points

[3]Now-a-days attacks on children are increasing at an unprecedented rate and the victims are in dangerous conditions, where they are not allowed to contact the family members. The technology that offers “Smart Child Safety” for children by using GSM ,Sensors,MEMS,Temperature and panic button using IOT

Advantages: This planned mechanism provides a better methodology to view and track the location of the children in terms of latitude and longitude which can be additionally tracked using google maps.

Disadvantages: The system may be enhanced by adding a camera application. Since the proposed system can detect the violence with good accuracy, for better performances, In the future it can be implemented with raspberry pi and lily pad can also be added.

[4]In the finding mode, the CCMF framework can cooperatively find missing children equipped with wearable devices consisting of mobile iBeacon and 3-axis accelerometer modules through crowd sourced sensing networks formed by smartphone users with outdoor GPS and indoor IoT localization.

According to relevant research, CCMF is the first children monitoring and finding solution that can detect holding-up postures of a target child and provide the guiding path to a lost child through crowdsourced sensing networks.

Advantages: In the monitoring mode, theCCMF framework can prevent young children from being taken away by strangers/people with bad intentions.

Disadvantages: In particular, the feasibility and superiority of framework are further verified through the implemented iOS-based crowdsourced children monitoring and finding prototypes with Arduino wearable devices and mobile/static iBeacon nodes.

[5]child safety and tracking is of utmost importance as children are the most vulnerable. With increasing crime rates such as child kidnaping, child trafficking, childabuse and so on, the need for an advanced smart security system has become a necessity. With this motivation, a self-alerting “INTELLIGENT CHILD SAFETY SYSTEM USING MACHINE LEARNING IN IOT DEVICES” is developed to aid parents to monitor the location and body vitals of the children.

Advantages: Major advantage of this proposed system over other wearable devices is that, it do not entirely depend on manual alerting by the victim, but can detect a distress situation automatically.

Disadvantages: The system size has to be reduced and the efficiency could be developed further for better performance.

[6]Vestures are essential for babies, All things considered; many ages of posterity have Observing wellbeing parameters of toddlers, for example, breath designs, oxygen level, rest movement is

mandatory. A canny baby monitoring is proposed based on internet of things to accomplish the remotely checking of various wellbeing parameters and notifying the persons who take care of the child

Advantages: This framework consist of PIR sensor, flexi sensor, and temperature sensor which totally secures the child from unflavourable occasions.

Disadvantages: Additional administrations like drug update,health bolster, and wellbeing,physiological parameters can be included.

[7] Smart education is the constituent of smart cities.Smart education is the use of computers in the classroom.There are many other factor to increase the child's quality of education.One part is the amount of time the child spends on a bus as many students use buses for schools and colleges.Bus tracking system which shows all bus tracking modules with sensors , it shows the real time tracking of buses to the parents.

Advantages: Tracking system could be used by individuals.GPS devices are affordable nowadays and are not limited to big enterprises or government agencies.

Disadvantages: An RFID technology can also be added for providing information on the number of passengers in a bus at any time and provides information on the number of vacant seats.

[8]In the real world, children's safety is a huge question mark in everyone's mind. The Hybrid model on the proposed solution to track the child environment.The model to compose all Iot ideas with 'Alcohol Smell and Smoke sensing module' to provide the best application to providing complete care of children,the child can be tracked even parents are in a remote place.

Advantages: The main focus of this model is to secure child's life with the help of internet of things and sensors.

Disadvantages: The components size has to be reduced to make it as a wearable one.

[9]With the emergence of the Internet of Things (IoT) technology, in addition to Radio Frequency Identification (RFID), developing and implementation of a comprehensive low-cost system based on IoT that allows schools, parents, and authorities to track the movement of children while in school buses or being transported in private vehicles in real time.

Advantages: Evolution of the Information and CommunicationTechnologies (ICT) through ubiquitous computing and it led to a plethora of intelligent systems. These systems offer robust, real time, and fast communication services for sharing information and data over the cloud such as the scenario of smart cities.

Disadvantages: The scope of the work can further be improved by incorporating diverse machine learning tools for better tracking, more flexibility, and additional useful features.

[10] Parents can send SMS with some keywords and the device replies back. The device Can detect the child's approximate location, it can detect the body temperature and the surrounding temperature,

humidity and also the heartbeat of a child. For the emergency situation, the device would have some measures like an alarm buzzer.

Advantages: Device can detect the child's approximate location,it can detect the body temperature and the surrounding temperature to approximate the child's physical condition. If a child has some allergy in high humid conditions then it can send an alert to notify the situation by measuring the humidity.

Disadvantages: Filtering of interference signals is required for better effectiveness. It will send data to the parents in a regular interval as well as on trigger based like when the parent requests for data and when the data exceeds the particular threshold value.

[11]The proposed system provides a more secure alert mechanism and facilitates the user's at school and during mobility to the school or home. The proposed system evaluates in terms of data delivery, time, and response alert parameters .It proposes a secure system for internet of schools things (S-IoST) for smart schools.

Advantages: Smart school have gained popularity due to their integrated and technologicalbased services and systems.

Disadvantages: Limitation of this proposed system is the kid age because this system needs awareness to handle.

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Dr. R. Kamalraj , Dr.M.Sakthivel Associate Professor CSE department Sree Vidyanikethan Engineering College Tirupati, India.978-1-5386-2456-2/18/$31.00©2018 IEEE.

[9] An IoT-Based School Bus and Vehicle Tracking System Using RFID Technology and Mobile Data Networks. Muhammad Wasim Raad.

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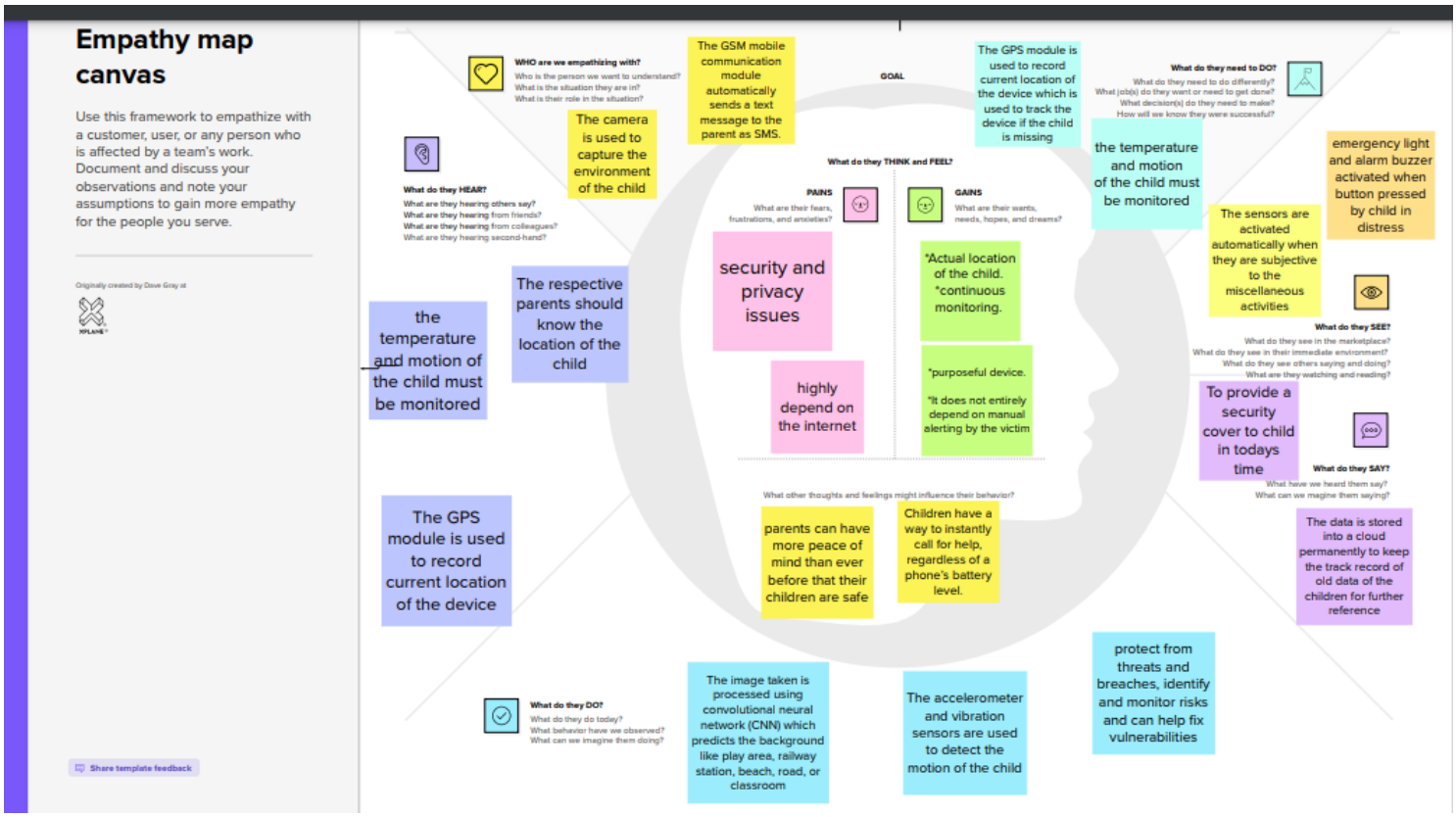
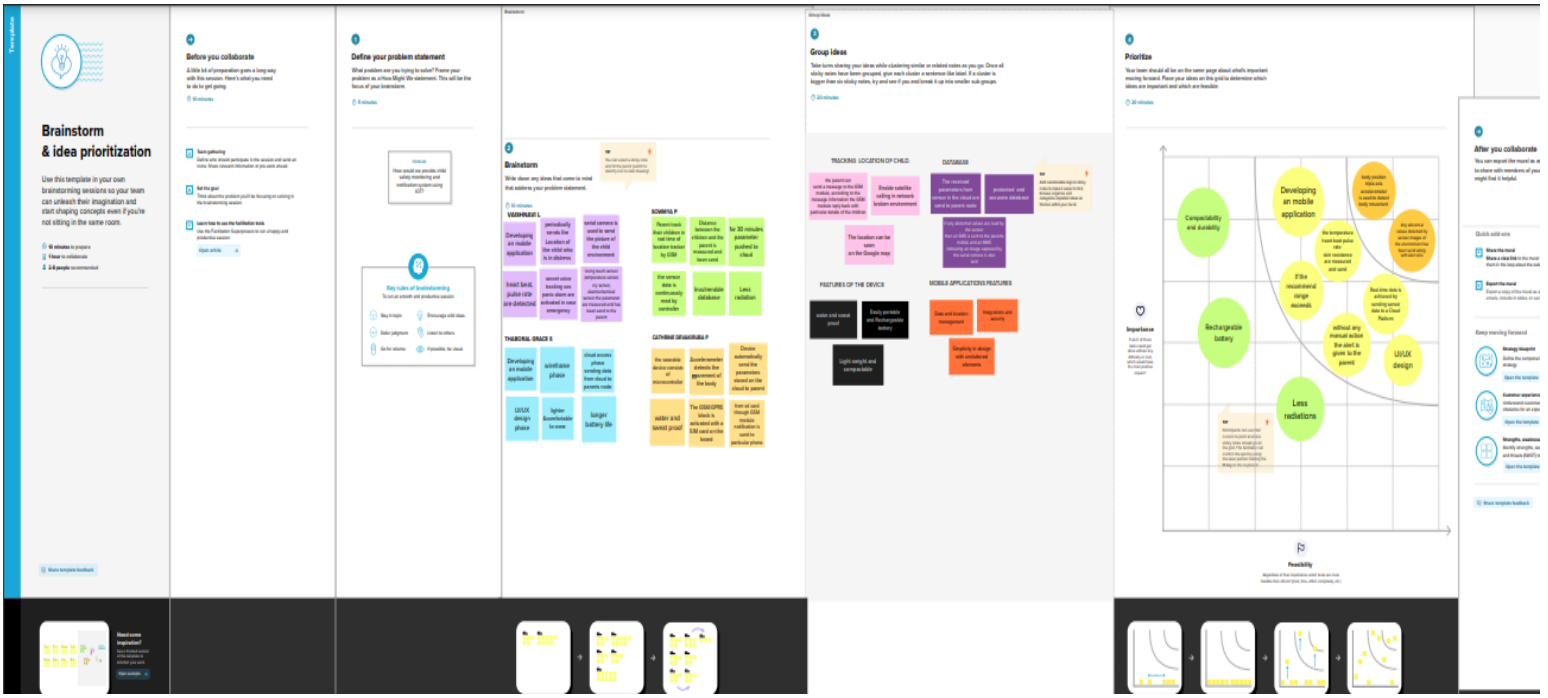
2.3 Problem Statement Definition

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



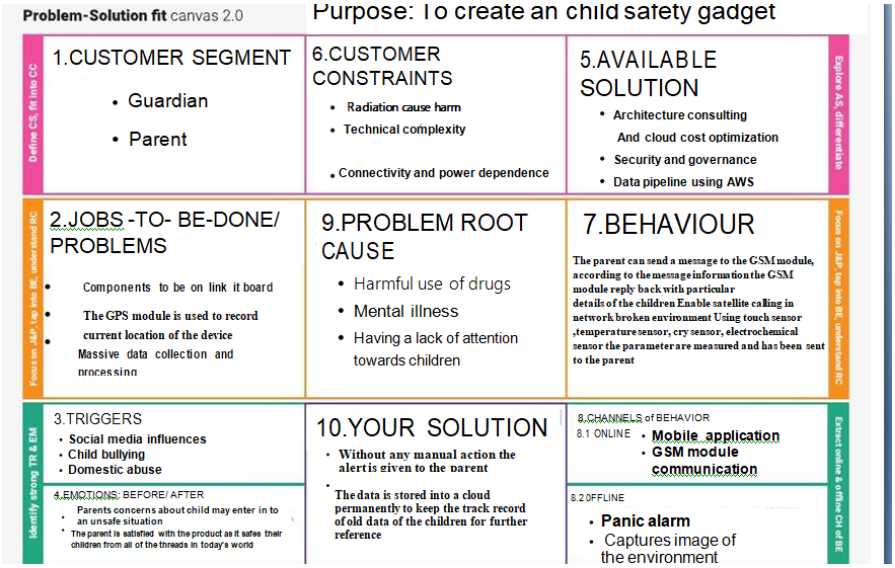
3.2 Ideation & Brainstorming



3.3 Proposed Solution

S.NO	PARAMETERS	DESCRIPTION
1.	Problem statement (Problem to be solved)	• These-days parents concern about their child being victimized in various domestic abuses and child bullying which makes them more anxious and stressed.
2.	Idea/ Solution Description	• To develop a mobile application for child monitoring/ tracking and sending notification to the parents.
3.	Novelty/ Uniqueness	• Novelty of the work is that the device periodically sends the location of the child who is in distress and secret voice tracking (SOS)panic alarms will be activated in case of emergency.
4.	Social Impact/ Customer Satisfaction	• It provides a safe environment for the children encountering difficulties while they are away from their parents/ special care takers. • The parent is satisfied with the product that it prevents their kids from various threats.
5.	Business Model (Revenue Model)	• Light in weight • Water and sweat proof • User friendly.
6.	Scalability of the solution	• The gadget provides a better methodology to view and track the location of the children. • It does not depend on manual alerting by the victim ,but can detect the abnormal things around the child automatically.

3.4 problem solution



4. Solution Requirements

4.1 Functional requirements

Functional Requirements:
Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	• Registration through Forms. • Registration through Gmail.
FR-2	User Confirmation	• Confirmation via OTP. • Confirmation via Email.
FR-3	Installation of App	• Installation through app store.. • Installation through links
FR-4	Virtual	• Find the location of the child by the user.
FR-5	Documentation	• Datas regarding the Child's location are stored in the database. • It includes Parent ID, kid ID, remoteness, etc.
FR-6	Spotting Child's location	• Spotting through GPS trackers.
FR-7	Geo-caching	• The surveillance of location through use of the GPS to track the location of the child remotely.
FR-8	GPS Modules	• GPS modules which contain processors and antennas that directly receive data of the child sent by satellites.
FR-9	Locality History	• With the locality history we can have the history of the geographic position of the child.

4.2 Non- functional requirements

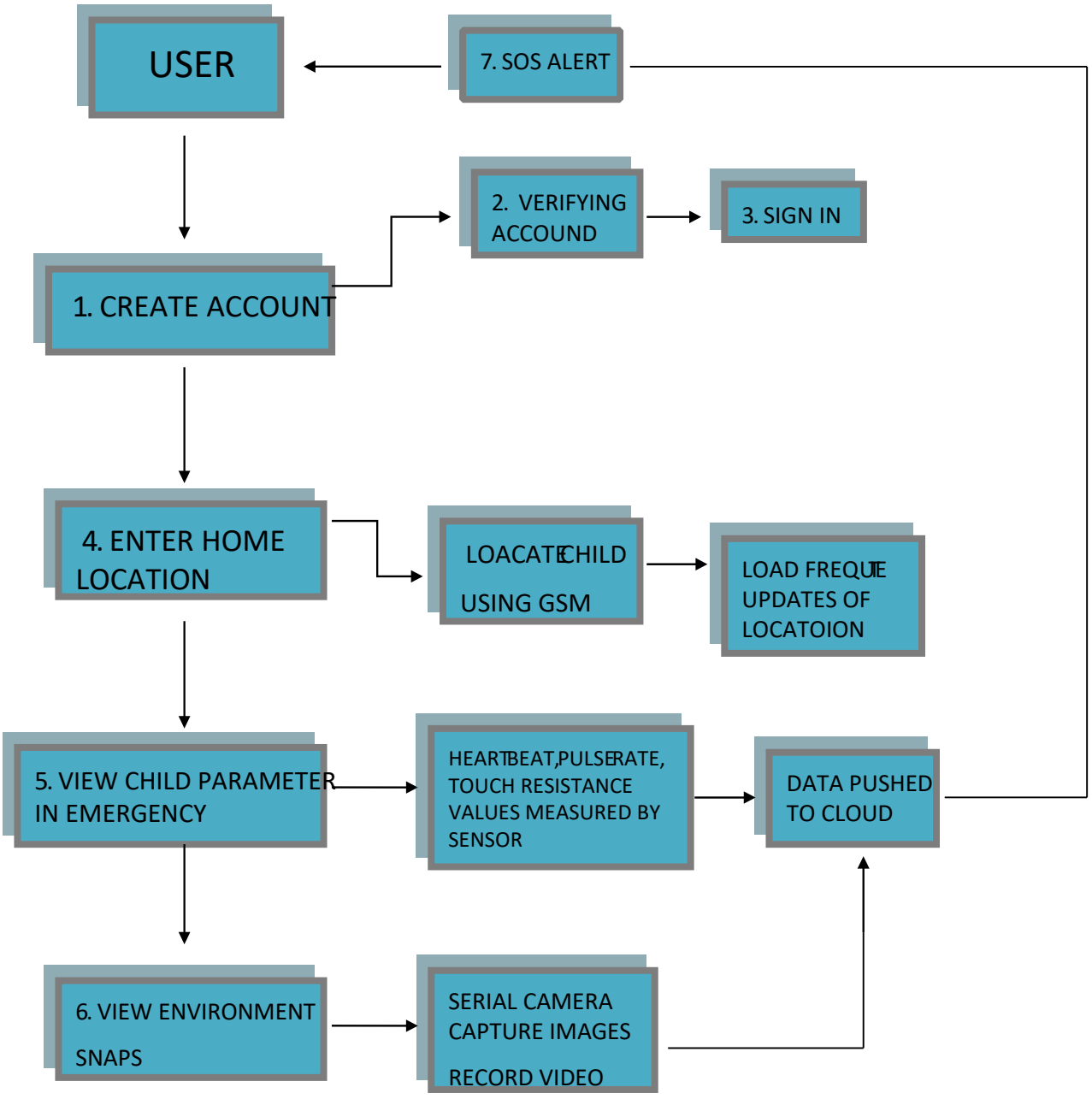
4.2 Non- functional requirements

Non-functional Requirements:
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Sub Requirement (Story / Sub-Task)
NFR-1	Usability	• The gadget has the Global System for Mobile Communication which is used for tracking the child and in cases such as theft it immediately alerts the child's parents.
NFR-2	Security	• Whenever the child goes out of the specified range it immediately notifies the parents through Geofencing.
NFR-3	Reliability	• Probability of success • Easy to use • Environment friendly
NFR-4	Performance	• The gadget which is being designed helps the parents to have a track on their Child at all times. • In case of an undesirable situation it immediately notifies the parents about the Child's location.
NFR-5	Availability	• It tracks the child even in the most crowded areas, extremely rough weather conditions, etc.
NFR-6	Scalability	• Continuously tracks the child and immediately notifies the parents. • The locality's history is also recorded.
NFR-7	Localization	• Devices may have the capability to adapt dynamically and change based on their conditions.

5.PROJECT DESIGN

5.1 Data Flow Diagrams



5.2 solution &technical architecture

SOLUTION ARCHITECTURE:

- The wearable IOT gadget consists Different components such as Temperature sensor, Touch sensor, heartbeat sensor, GSM, GPS modules and serial camera are connected to the Link It ONE Board along with build in GSM, GPS modules

- The GSM module which is used for tracking the child location in emergency situation

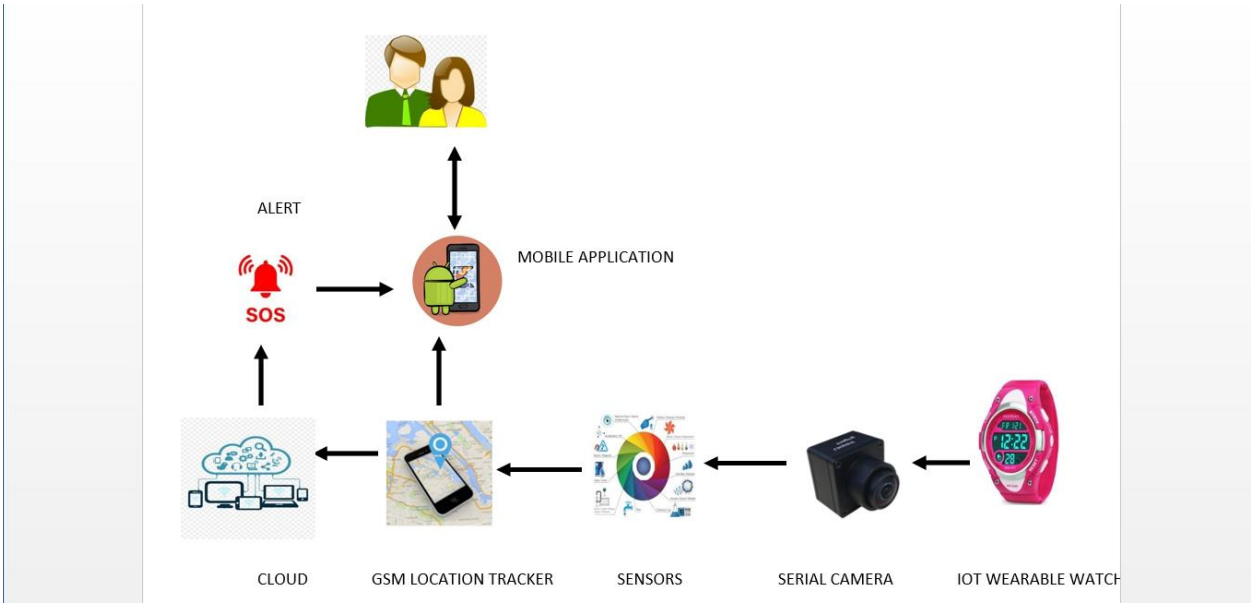
- The camera which captures the image of the child's environment and send it to parent/guardian

- Temperature sensor is used to measure temperature of the human body. The body temperature and galvanic skin resistance of the body is changed in abnormal conditions

- This was used as input information and the alert signal is produced while it crosses the threshold value. This work deals with body temperature and stress, skin resistance and relationship between them. By applying these parameters activity of the person was analyzed. Body position is determined by a triple axis accelerometer

- The touch sensor has three main components on the circuit board. The first component comprises of resistors, transistors, capacitors, inductors, and diodes whose area is measured physically and its analogue signal is send to an amplifier. Depends upon the resistant value of the potentiometer the amplifier amplifies the signal and sends the signal to analogue output of the module. The third component is comparator, when the signal falls under a specific value it is used to switch the output
- The heartbeat sensor is used in the proposed system for measuring the pulse rate
- The device sends the monitored parameters data such as Temperature, touch and pulse rate to cloud. When there are any abnormalities in temperature or touch or pulse rate readings, a SMS is sent to the parent/caretaker mobile phone immediately

parent



5.2TECHNOLOGY STACK

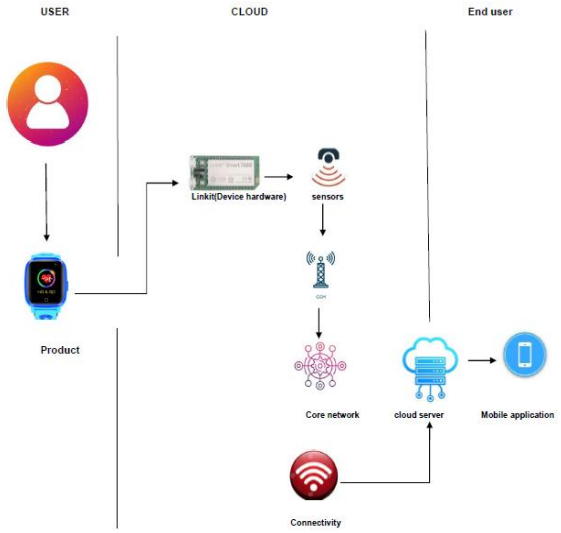


Table-1:

Components&Technologies:

S.NO	Component	Description	Technologies
1.	User interface	How user interacts with application e.g. Web UI, Mobile App	HTML,CSS,JAVASCRIPT
2.	Application Logic-1	Logic for a process in the application	C++,python
3.	Application Logic -2	Logic for a process in the application	IBM Watson STT service
4.	Application Logic -3	Logic for a process in the application	IBM Watson Assistant
5.	Sensing and embedded components	It forms back bone of the entire IOT network	Link it ,Raspberry pi Emerging sensors
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloud and etc.
7.	File Storage	Database Service on Cloud	IBM Block Storage or Other Storage Service or Local File system
8.	External API-1	Purpose of External API used in the application	IBM Weather API, etc .
9.	Location	Global system mobile combination The universal availability of mobile networks makes GSM tracking devices a powerful alternative to GPS	GSM
10.	Movement detection	Body position is determined by a triple axis accelerometer	Accelerometer

11.	Infrastructure(server/cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	Local, Cloud Foundry

Table-2:

Application Characteristics:

S.NO	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Node red, device hive
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	High-end CC EAL6+ (high) certified security controller
3.	Scalable Architecture	Justify the scalability of architecture	Python micro server framework
4.	Availability	Justify the availability of application	low-energy Bluetooth, lowenergy wireless
5.	Performance	Design consideration for the performance of the application	Back office application Such as CRM

5.3 User Stories

USER TYPE	FUNCTIONAL REQUIREMENTS (EPIC)	USER STORY NUMBER	USER STORY / TACK	ACCEPTANCE CRITERIA	PRIORITY	REALEASE

Customer (Mobile user)	Registration	USN-1	As a user, I can register my account by entering my Email Id, phone number, password and confirming my password.	I can access my account / dashboard.	High	Sprint-1
		USN-2	As a user, I will receive a confirmation email once I have done the registration.	I can receive a confirmation email and click confirm to proceed.	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook.	I can register and access the dashboard with Facebook login.	Medium	Sprint-2
		USN-4	As a user, I can register for the application through email.	I can register and access the dashboard with email login.	High	Sprint-1
	Login	USN-5	As a user, I can login to the application by entering user Id and password.		High	Sprint-1
Customer Care Executive	Login		As I enter the application, I can view the actual working of the application, monitor the operations and scan for any glitches and check if all the users are authorized.	I can login only with the provided credentials.	Medium	Sprint-3

Administrator	Login		Maintaining and checking the database containing the locations and certain monitoring features are secure and accurate and are updated eternally.	I can login only with the provided credentials.	High	Sprint-3

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Product backlog , sprint schedule,Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Download app	USN-1	The user can download the application from the android platform	2	High	Vaishnavi.L
Sprint-2	Registration	USN-2	They can register with their respected email id and personal number	1	High	Thaboral Grace.S
Sprint-3	verification	USN-3	They get a confirmation mail for verification purpose.	2	Low	Sowmya.P
Sprint-4	Network setup	USN-4	The device registered network should be fixed	2	Medium	Catherine devakiruba.P
Sprint-4	Device connectivity	USN-5	A stable connection between the device and the application is maintained	2	High	Catherine devakiruba.P

6.2 Sprint Delivery Schedule

Project Tracker,Velocity&Burndown Chart

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)

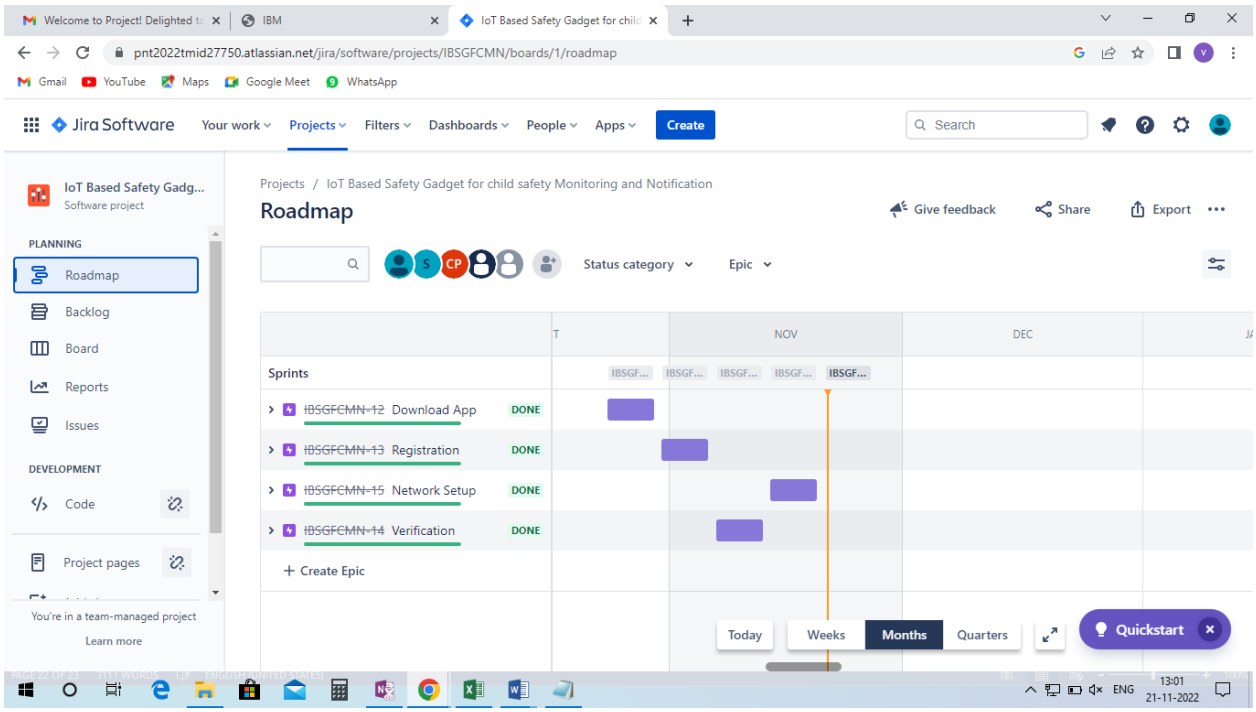
Sprint -1	2	6 Days	26 Oct 2022	31 Oct 2022	2	09 Nov 2022
Sprint -2	1	6 Days	31 Oct 2022	05 Nov 2022	1	
Sprint -3	2	6 days	07 Nov 2022	12 Nov 2022	2	
Sprint -4	2	6 Days	14 Nov 2022	19 Nov 2022	2	

VELOCITY:

Imagine we have a 7 -day sprint duration and the velocity of the team is 2 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day).

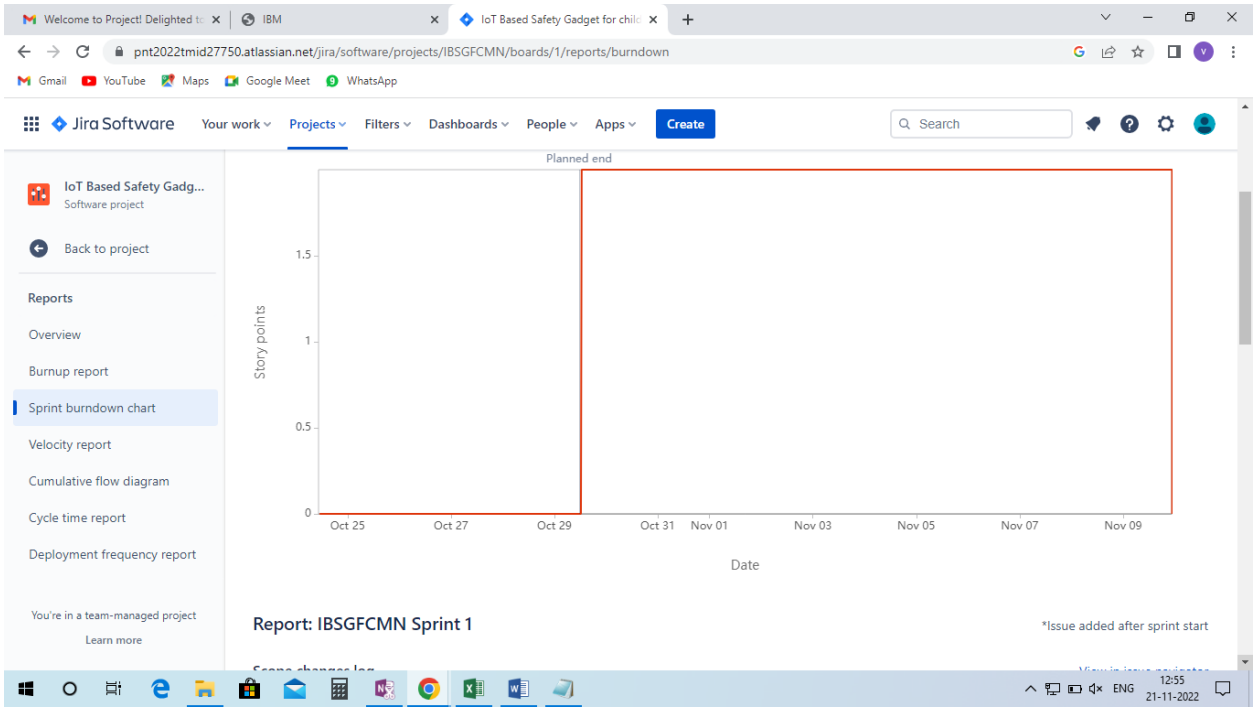
6.3 Reports from JIRA

JIRA Roadmap:

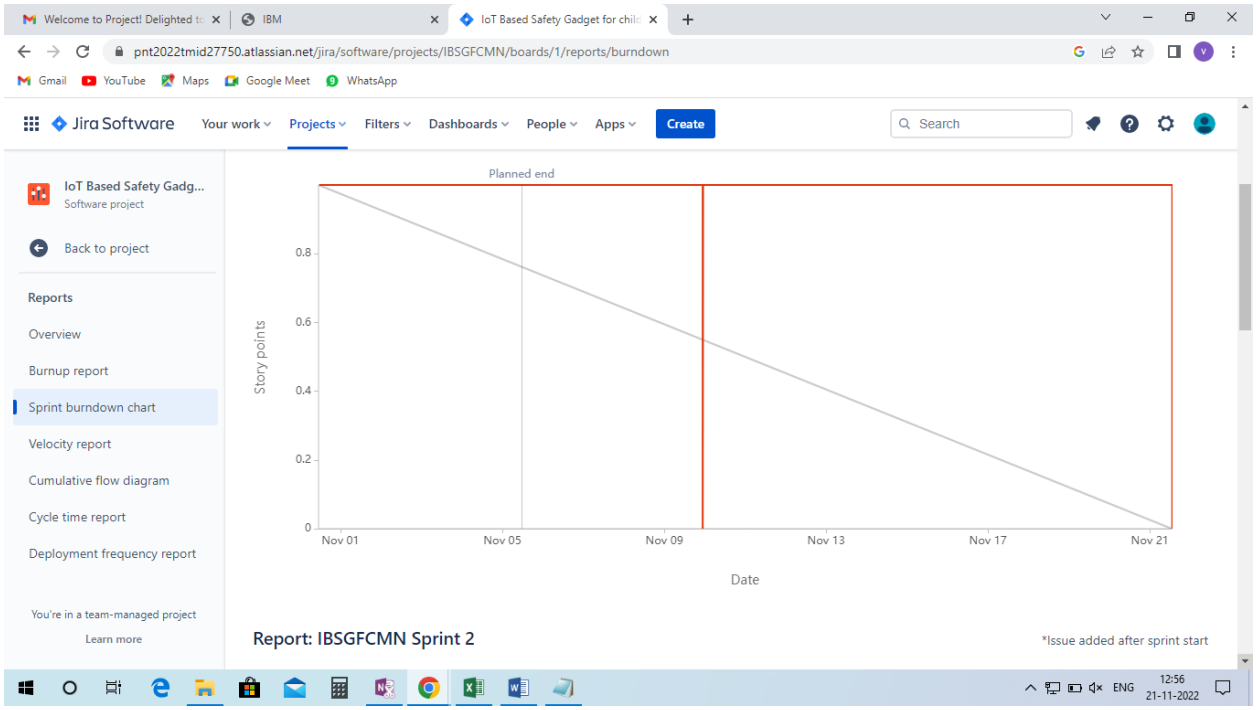


Burndown Chart:

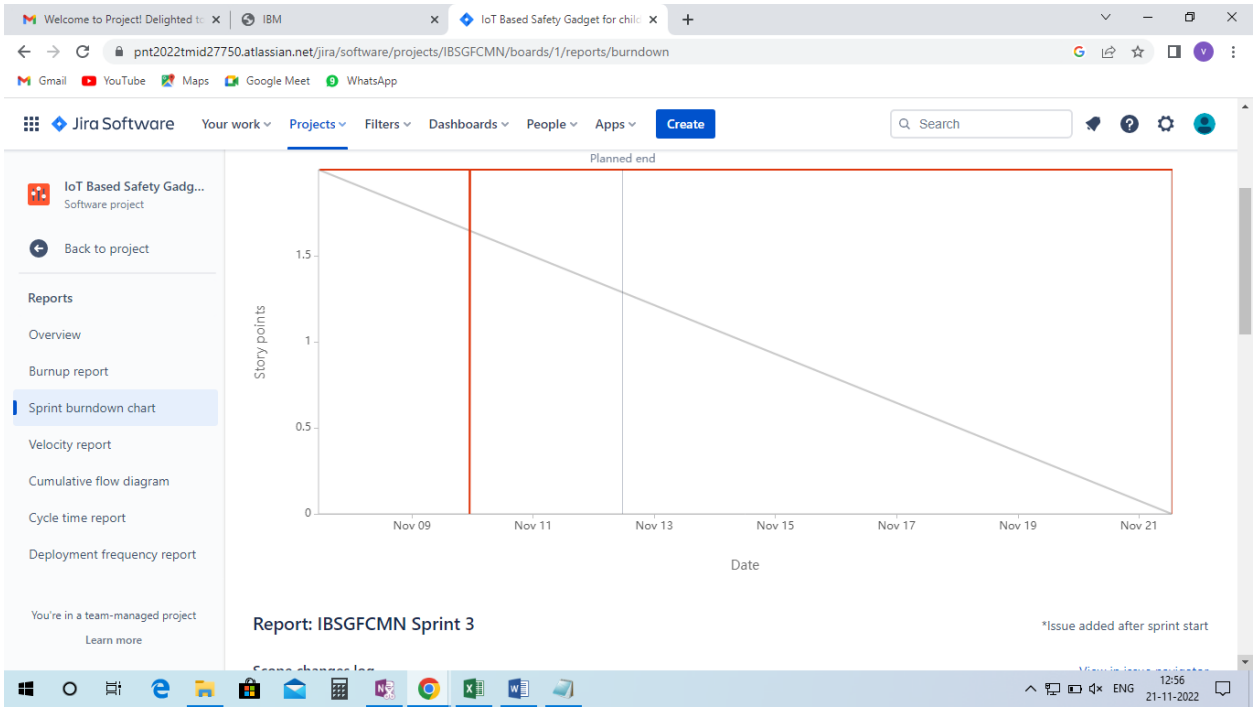
Sprint 1



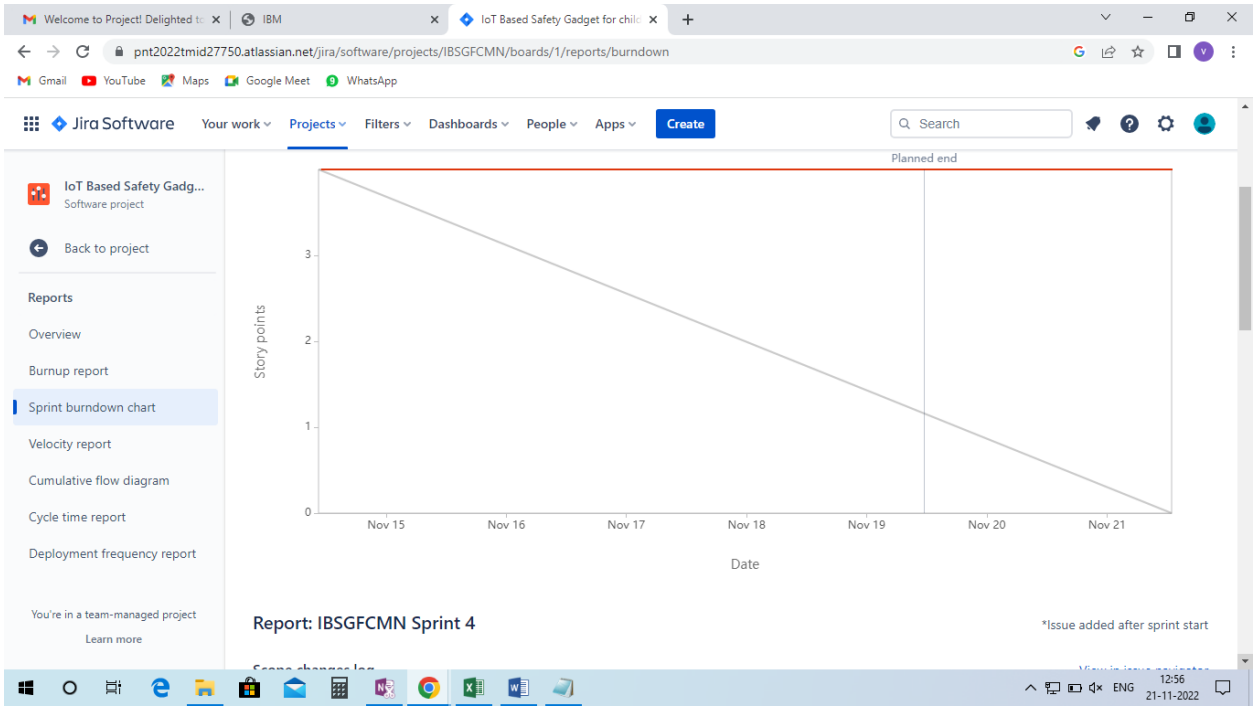
Sprint2



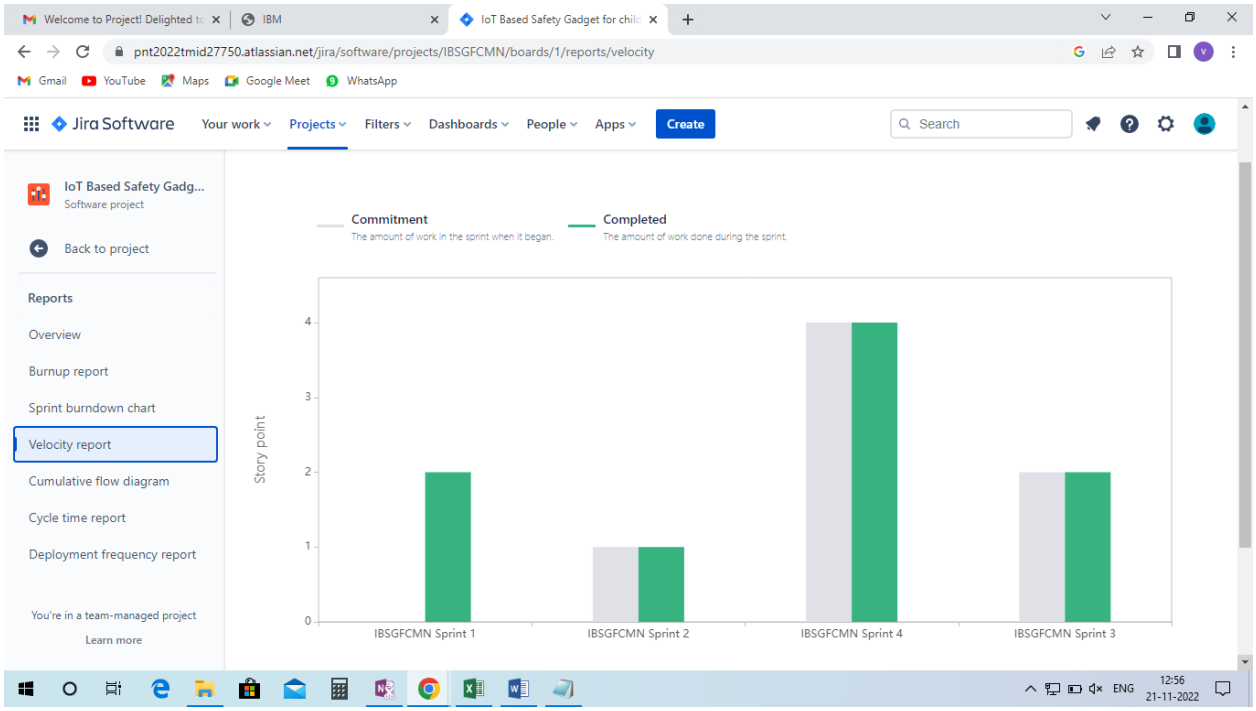
Sprint3



Sprint4



Velocity Report



7. CODING&SOLUTIONING

7.1 SPRINT 1- PYTHON CODE

File Edit Format Run Options Window Help

```
import json
import wiotp.sdk.device
import time
myConfig ={
 "identity":{
 "orgId": "3x3tqy",
 "typeId":"childsafetydevicetype",
 "deviceId":"jeho77iot"
 },
 "auth":{
 "token":"HiO5Z&Js+k03jLMMM5"
 }
}
client = wiotp.sdk.device.DeviceClient(config=myConfig,
logHandlers=None)
client.connect()
while True:
 name="locater"
 #in area location
 #latitude=13.145997614532394
 #longitude=80.0619303452179
 #out area location
 latitude=13.15412
 longitude=80.05729

 myData={'name':name, 'lat':latitude, 'lon':longitude}
 client.publishEvent(eventId="status", msgFormat="json",
data=myData, qos=0, onPublish=None)
 print("Data published to IBM Iot platform: ",myData)
 time.sleep(2)

client.disconnect()
```

```
*Python 3.7.0 Shell*
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.0 (v3.7.0:1bf9cc5093, Jun 27 2018, 04:06:47) [MSC v.1914 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
== RESTART: C:/Users/Home/AppData/Local/Programs/Python/Python37-32/jeho.py ==
2022-11-18 15:12:42,025   wiotp.sdk.device.client.DeviceClient  INFO    Connected successfully: d:3x3tqy:chi
orm:
 {'name': 'locater', 'lat': 13.15412, 'lon': 80.05729}
Data published to IBM Iot platform:  {'name': 'locater', 'lat': 13.15412, 'lon': 80.05729}
Data published to IBM Iot platform:  {'name': 'locater', 'lat': 13.15412, 'lon': 80.05729}
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Data published to IBM Iot platform:  {'name': 'locater', 'lat': 13.15412, 'lon': 80.05729}
Data published to IBM Iot platform:  {'name': 'locater', 'lat': 13.15412, 'lon': 80.05729}
```
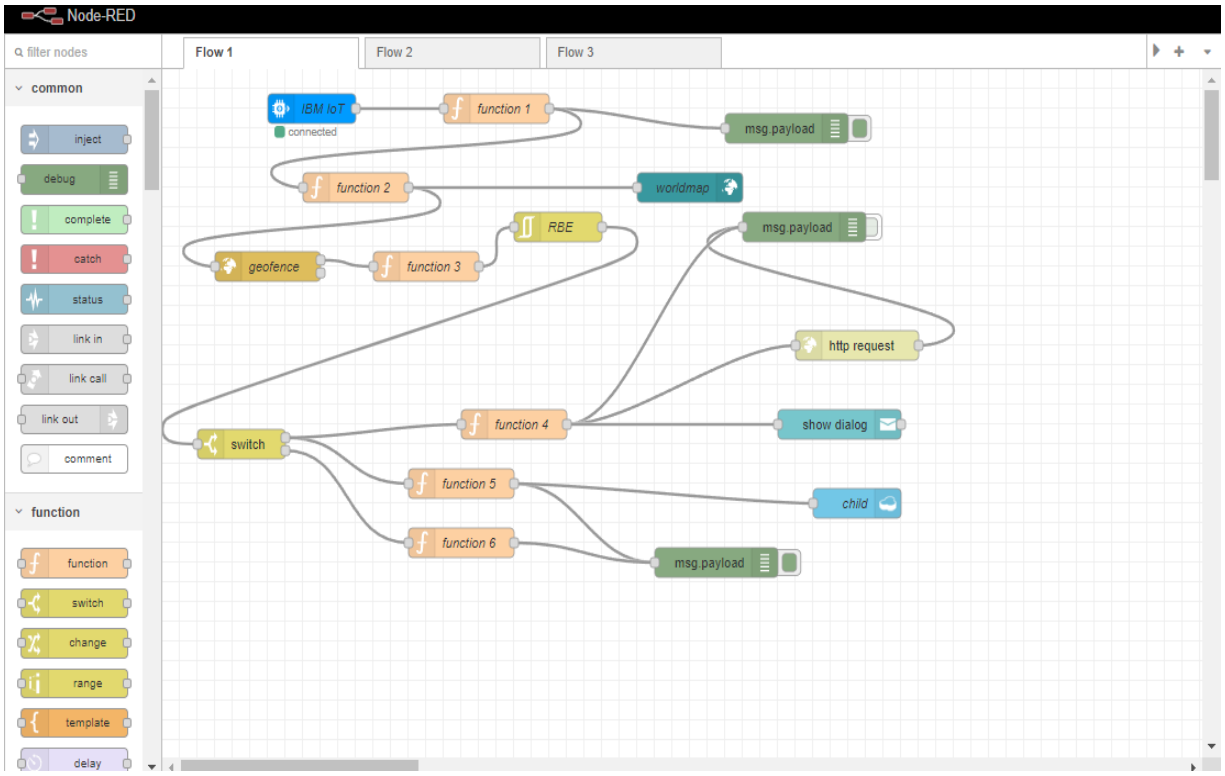
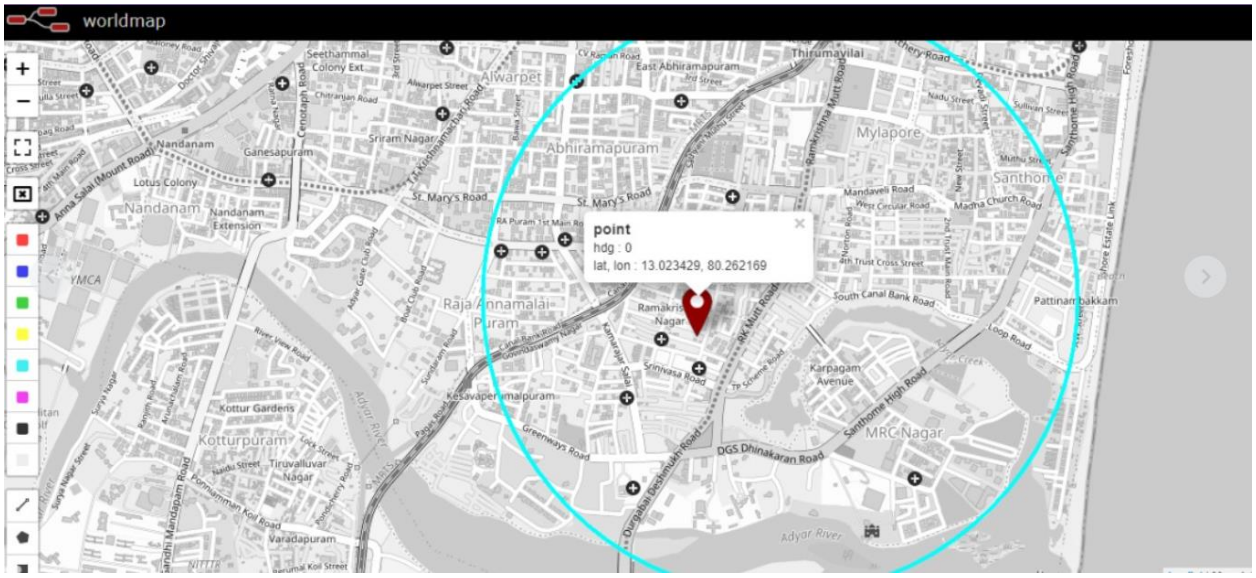

Sprint-2- Node red flow

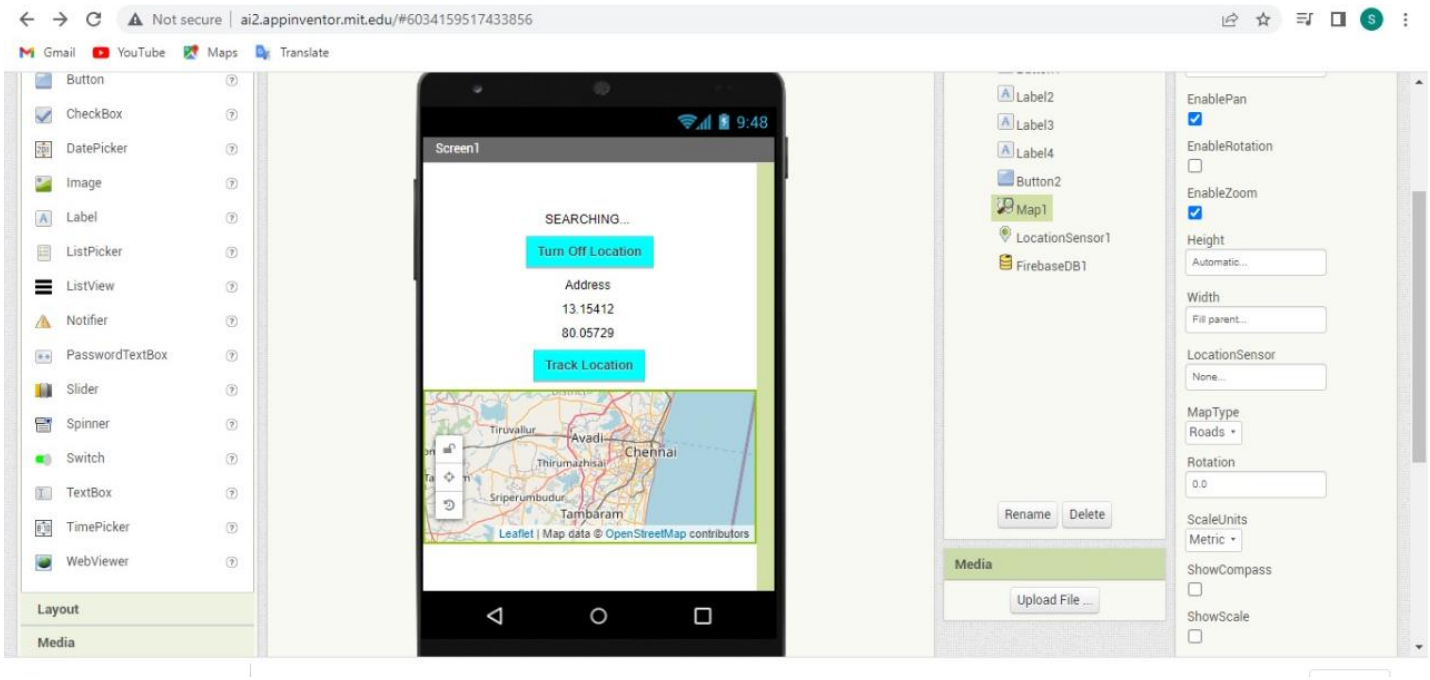
Create a node red flow for tracking our location through web url





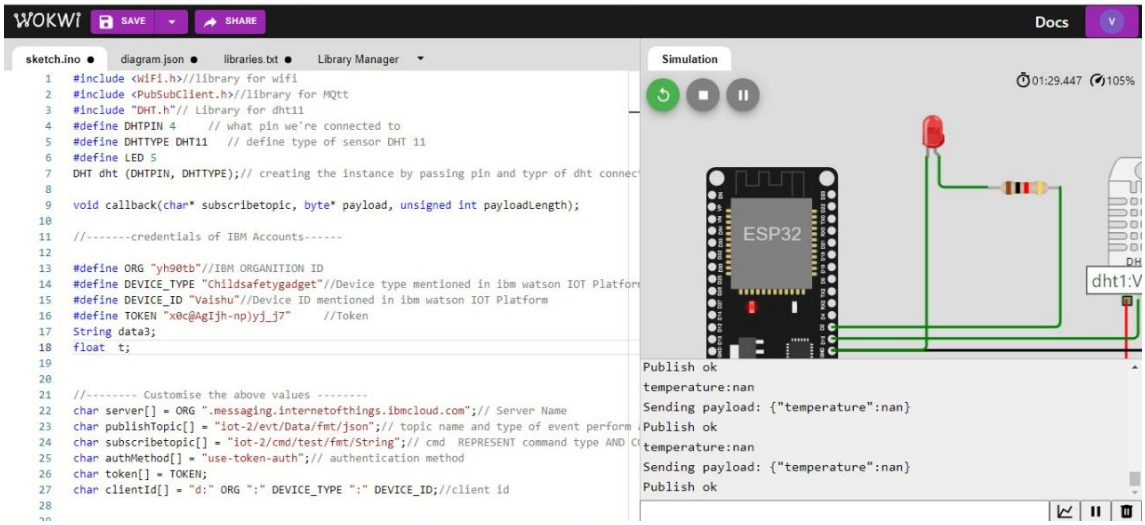
Sprint-3

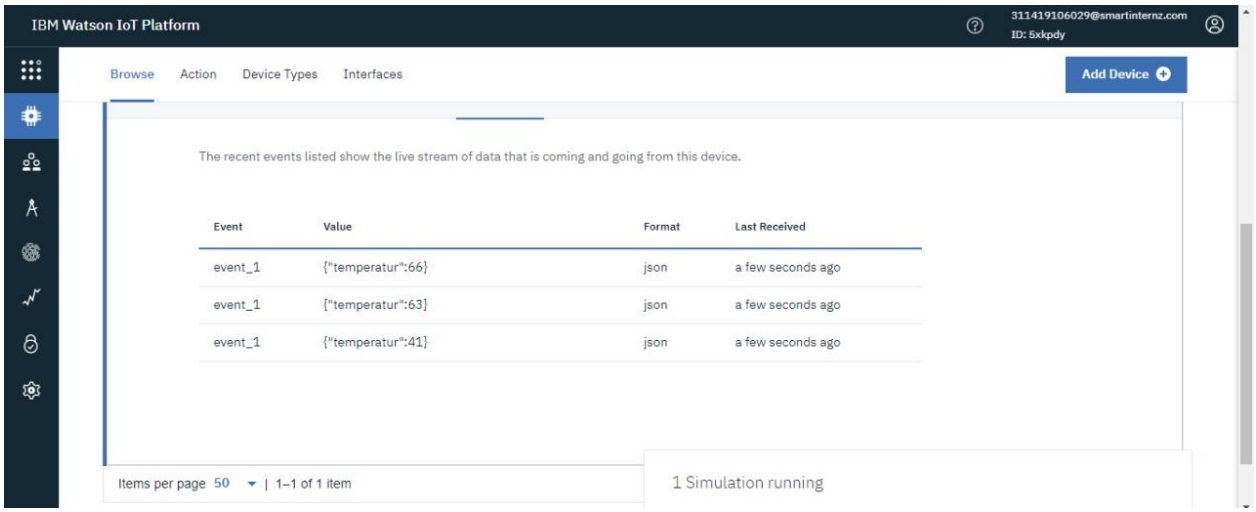
Creating application for tracking



Sprint-4

Sending temperature sensor data to cloud





8. User Acceptance Testing

8.1 Test cases

						name="locater"							

Date	21-Nov-22
Team ID	PNT2022TMID27750
Project Name	Project- IOT Based Safety Gadget for Child Safety Monitoring and Notification
Maximum Marks	4 marks

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
IBM cloud_TC_002	Functional	IBM Cloud services	verify the IBM cloud login	IBM cloud services	1.login IBM cloud.com 2.obtain the promocode in ICT Academy	email id: [illegible]	successfully created the IBM account	Working as expected	pass	Steps are not clear to follow	yes	nil	vaishnavi
IBM WATSON IOT Platform_TC_003	Functional	IBM cloud services	Verify and create a device in the IBM Watson platform and get the device credentials	IBM cloud services	1.in IBM cloud services go to catalog 2.To create a IOT platform 3.launch the IBM Watson IOT platform 4.login the platform by clicking organisation 5.create a device and	create a device and integrate with code	{'name': 'locater', 'lat': [illegible], 'lon': [illegible]}	working as expected	pass	Steps are not clear to follow	yes	nil	sowmya
board_TC_004	Non-Functional	IBM cloud services	verify the events shown in the card	IBM cloud services	1.go to IBM watson IOT platform 2.create the board	board monitoring	gauge-latitude gauge-longitude	working as expected	Pass	Steps are not clear to follow	yes	NIL	catherine
cloudantDB_TC_004	dataset	IBM Cloud services	Verify the events stored in the board	IBM cloud services	1.go to IBM cloud services 2.in resources list,click on cloudant 3.in database create a	document tracker	successfully created the database	Working as expected	Pass	Steps are not clear to follow	yes	NIL	vaishnavi
NodeRedService_TC_005	Functional	IBM Cloud services	Verify to create a node red services	IBM cloud services	1.in IBM cloud services go to catalog 2.create a node red app 3.deploy the app 4.visit the app URL 5.in node red we connect th	using geofence node, we create a form of circle to check whether the child is that area or not	nodes are connected	Working as expected	Pass	Steps are not clear to follow	yes	NIL	Thaboral Grace

Date	21-Nov-22
Team ID	PNT2022TMID27750
Project Name	Project- IOT Based Safety Gadget for Child Safety Monitoring and Notification
Maximum Marks	4 marks

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
board_TC_004	Non-Functional	IBM cloud services	verify the events shown in the card	IBM cloud services	1.go to IBM watson IOT platform 2.create the board	board monitoring	gauge-latitude gauge-longitude	working as expected	Pass	Steps are not clear to follow	yes	NIL	catherine
cloudantDB_TC_004	dataset	IBM Cloud services	Verify the events stored in the board	IBM cloud services	1.go to IBM cloud services 2.in resources list,click on cloudant 3.in database create a	document tracker	successfully created the database	Working as expected	Pass	Steps are not clear to follow	yes	NIL	vaishnavi
NodeRedService_TC_005	Functional	IBM Cloud services	Verify to create a node red services	IBM cloud services	1.in IBM cloud services go to catalog 2.create a node red app 3.deploy the app 4.visit the app URL 5.in node red we connect th IBM watson IOT platform	using geofence node, we create a form of circle to check whether the child is that area or not	nodes are connected	Working as expected	Pass	Steps are not clear to follow	yes	NIL	Thaboral Grace
webUI_TC_006	Functional	node red	to create a web UI to interact wit	Node Red Services	1.go to dashboard 2.open a link t	shows the exact location	gives the location of the person	working as	Pass	Steps are not clear to fo	yes	NIL	sowmya

Date	21-Nov-22
Team ID	PNT2022TMID27750
Project Name	Project- IOT Based Safety Gadget for Child Safety Monitoring and Notification
Maximum Marks	4 marks

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Automation(Y/N)	BUG ID	Executed By
pythoncode_TC_001	code	python3.7.0	Verify python code is run without error	software	1.download python version 3.7.0 2.type the program and save it 3.verify it is run continuously	import json import wiotp.sdk.device import time myConfig={ "identity":{ "orgId":"[illegible]", "typeId":"childsafetydevice", "deviceId":"[illegible]" }, "auth":{ "token":"[illegible]" } } client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None) client.connect() while True: name="locater"		Working as expected	Pass	steps are clear to follow	yes	NIL	ThaboralGrace

	Test Scenarios
1	Verify the python code is run without error
2	verify the login of the cloud services
3	verify create a device in the IBM Watson IOT platform and get the device credentials
4	verify the events shown in the card
5	verify the events is stored in the database
6	verify to create node-red services
7	to create a web UI to interact with user
8	verify user is able to login to the app with valid credentials
9	verify it shows the location of the user

8.2 User Acceptance Testing

1.PURPOSE OF DOCUMENT

The purpose of this document is to briefly explain the test coverage and open issues of IOT safety gadget for child safety monitoring and notification project at the time of release to User Acceptance Testing (UAT).

2.DEFECT ANALYSIS

The report shows the number of resolved or closed bugs at each severity level, and how they were resolved.

RESOLUTION	SEVERITY 1	SEVERITY 2	SEVERITY 3	SEVERITY 4	SUBTOTAL
By Design	9	4	3	5	21
Duplicate	2	1	2	0	5
External	2	2	0	2	6
Fixed	7	1	2	20	30
Not Reproduced	0	1	0	1	2
Skipped	1	0	1	1	3
Won't Fix	0	5	1	1	7
Totals	21	14	9	30	74

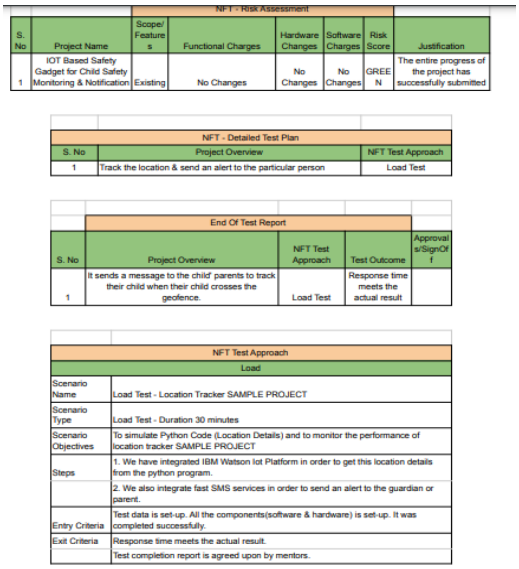
SECTION	TOTAL CASES	NOT TESTED	FAIL	PASS
Print Engine	7	0	0	7
Client Application	40	0	1	39
Security	2	0	0	2
Outsource Shipping	3	0	0	3

3. TEST CASE ANALYSIS

This report shows the number of test cases that have passed ,failed, and untested.

Exception Reporting	10	0	1	9
Final Report Output	5	0	0	5
Version Control	3	0	0	3

9.performance metrics



NFT - Risk Assessment

S. No	Project Name	Scope/ Features	Functional Charges	Hardware Changes	Software Charges	Risk Score	Justification
1	IOT Based Safety Gadget for Child Safety Monitoring & Notification	Existing	No Changes	No Changes	No Changes	GREEN	The entire progress of the project has successfully submitted

NFT - Detailed Test Plan

S. No	Project Overview	NFT Test Approach
1	Track the location & send an alert to the particular person	Load Test

End Of Test Report

S. No	Project Overview	NFT Test Approach	Test Outcome	Approvals/SignOff
1	It sends a message to the child' parents to track their child when their child crosses the geofence.	Load Test	Response time meets the actual result	

NFT Test Approach

Load	
Scenario Name	Load Test - Location Tracker SAMPLE PROJECT
Scenario Type	Load Test - Duration 30 minutes
Scenario Objectives	To simulate Python Code (Location Details) and to monitor the performance of location tracker SAMPLE PROJECT
Steps	1. We have integrated IBM Watson Iot Platform in order to get this location details from the python program.
	2. We also integrate fast SMS services in order to send an alert to the guardian or parent.
Entry Criteria	Test data is set-up. All the components(software & hardware) is set-up. It was completed successfully.
Exit Criteria	Response time meets the actual result.
	Test completion report is agreed upon by mentors.

10. ADVANTAGES & DISADVANTAGES

Advantages:

1.Parents no longer need to ring their child continuously, thus causing them to feel embarrassed, or interrupting their play and exploration.
Location tracking can also ease unnecessary worry if a child doesn't answer the phone straight away - through GPS tracking, a parent can receive a quick update and put their mind to rest.

2 .It gives children more freedom because when parents know where the children are, means they're more relaxed about letting the kids go further afield.

3. Location tracking can also be reassuring for the child, particularly if they get lost - this is especially useful if a child wanders off in a crowded place.

4. Know the current location Our Kids GPS Tracker provides real-time location of your children. You can track the live locations of your kids, where they are and what they are doing.

5. Get geofence details of kids at any time Send alert notification to the parents if their children cross the geofence.

Disadvantages

1. Young people may respond to being tracked by becoming increasingly secretive and flouting the surveillance by, for example, leaving their phone at a friend's house so their parents think they're there.

2. Children need a smartphone for their parents to install a tracking app, but this can expose them to the potential dangers associated with social media and the internet such as cyberbullying, inappropriate contact with strangers and unsupervised access to inappropriate information.

3. Trust issues
If they're being tracked, young people may feel their parents think they can't be trusted. By contrast, if they feel they are trusted, such responsibility can help them behave in a trustworthy manner.

11. CONCLUSION

This Project demonstrates smart IoT devices for child safety tracking and monitoring, to help the parents to locate and monitor their children. We have integrate IBM Watson Iot Platform in order to get this location details (i.e. latitude & longitude) from python program and we also integrate Fast SMS service in order to send an alert to guardian/ parent. The system also consists of mobile app and send all the monitored parameters to cloud on parental phone.

12. FUTURE SCOPE

This system can be further enhanced by installation of mini-camera inside smart gadget for better security so that live footage can be seen on parental phone during panic situations. GPS device come with a panic button that let your child alert you when something wrong or they need help. The system can be modified by installation of small sol ar panels for charging the battery of smart gadget to gain maximum battery backup.

13. APPENDIX

Source Code :

GithubLinK : https://github.com/IBM-EPBL/IBM-Project-11284-1659285482